

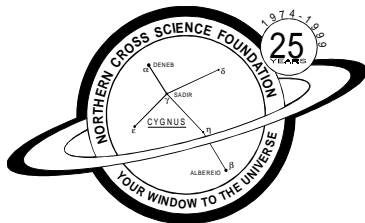
SPECTRUM

Northern Cross Science Foundation Newsletter

October 1999

LOOKING UP

- Oct. 2 Saturday**
Members Night
7:00 PM
Mike Matthies Home
- Oct. 7 Thursday**
Astronomy 101
7:00 PM
General Meeting
8:00 PM
Carlson Tool & Mfg.
- Oct. 7 – 10 Thur. – Sun.**
Great Plains
Star Party
Scopeville, Kansas
- Oct. 15 Friday**
Public Viewing
8:00 PM
Riveredge Nature Center
- Oct. 20 Wednesday**
Board Of Directors
7:30 PM
Jeff Setzer's House
- Oct. 30 Saturday**
Halloween Hike viewing
8:00 PM
Harrington Beach Park
SEE CURRENT CLACK !



A Publication Of
The Northern Cross
Science Foundation

Star Party Observing

by Kevin Bert

One of the great things about a large star party is the variety of telescopes you get a chance to look through. I would be content all evening wandering from scope to scope, comparing views and talking with their owners. For the most part the attendees that bring them like to show them off and are willing to give you a turn at the eyepiece. There are a few that have a project their working on and would prefer not to be interrupted. Here are some observations that I have made when it comes to viewing through peoples telescopes.

If a line has already started, it is a simple matter of making your way to the end and waiting your turn. Most of the time this is the case, especially if it is a large or impressive scope that attracts people. Some times people just mill around randomly af-

ter they have had a look, waiting for the next object to view, so it is hard to determine if there is a line and where the end of it might be. If you're not in a particular hurry you could just stand around for a while to see if the person running the scope gives the last call to view a particular object or wait until the scope is moved to a new object. and watch for a line to develop. The quickest method is to ask where the end of the line is. This sends a signal that you obviously would like a look and quite often you will be invited to look right away.

It becomes a little more difficult to decide on an approach if only one or two persons are around looking through or adjusting the telescope. Again just standing
(See PARTY on page 3)

A Short History of the Telescope Part 1

From Lake County Astronomical Society <http://www.bbso.njit.edu/>

Galileo did not invent the telescope -- he simply knew how to take advantage of a good thing! The telescope was really invented by the Dutch spectacle maker, Jan Lipershey, and first used to spy on foreign ships.

When he conducted his observations in the early 1600's, Galileo primarily used two telescopes; each had a double-convex lens in front, and an eyepiece that was a single double-concave lens. One had an objective of 26mm with a focal ratio of f/51, giving 14 power, and the other had a 16mm objective at f/61, which gave 21 power. Those familiar with optics will realize that these designs provided ridiculously narrow fields of view by today's standards. Modern day analysis of his lenses shows they had a

surprisingly good figure; however, the images suffered because the clarity of the glass at that time was poor. As a result, images were never really sharp. This explains why Galileo did not understand the nature of Saturn; to him it appeared simply as a curious oblong blob.

Johannes Kepler is credited with redesigning the eyepiece to make it convex, rather than concave, thus widening the field of view. The division in Saturn's ring-system was first recorded in 1675, and five of its moons were discovered between 1655 and 1684. Apparently, telescopes by this time were able to resolve to nearly one arc-second.

(See History on page 2)

September Minutes

By Kevin Bert

The September meeting of the Northern Cross Science Foundation was held in the conference room of Carlson Tool & Mfg. in Cedarburg. The Astronomy 101 class preceded the business meeting.

President Jeff opened the meeting at 9:00 p.m. to over 14 people.

Jeff thanked all people that were in attendance. He said that things were finally settling down after his move from Brown Deer to West Bend. (Note his new address and phone number on the back page). He

asked for standard reports.

Brad Plaumann was absent for a treasurers report, and Kevin Bert only commented on the newsletter briefly.

Jeff talked about last months events and went over upcoming events for September. One change was the Board meeting being moved up one week to the 8th. Mike Matthies member night was the new date highlighted for Saturday October 2nd.

Under new business, Henry Paque mentioned that it is possible for interested people to view from Highland Rotary Park in Mequone. You only have to call the Mequone police department to say you will be there ahead of time.

The business meeting was closed by Jeff Setzer at 9:30 p.m.

Respectfully submitted,
Kevin Bert, secretary

(History from page 1)

Despite improvements in the quality of optical glass, there was still the problem of chromatic aberration -- the colored glow around bright objects. Our eyes are most sensitive in the yellow part of the spectrum at almost the exact frequency that the Sun radiates most strongly. A simple lens can sharply focus a maximum of two colors at a time. Therefore, we tend to focus on the colors yellow and green. Colors on each of the opposite ends of the spectrum -- red and blue-violet -- are out of focus, so objects have a purple halo. Telescopes at this time had to have very long tubes. In addition to increasing magnification, a longer focal length tended to minimize the aberration. Plus there was the difficulty of generating the deep curve required for a shorter focal ratio.

Though we associate Isaac Newton with the reflector, it was the Scottish mathematician, James Gregory, who first announced in 1663 his invention of a telescope that used mirrors. It did two things: the problem of chromatic aberration was eliminated and there was provided a means to dramatically increase light gathering. Nonetheless, telescope makers were hampered by a lack of suitable material. The speculum metal used for the mirrors wasted much of the available light -- they sim-

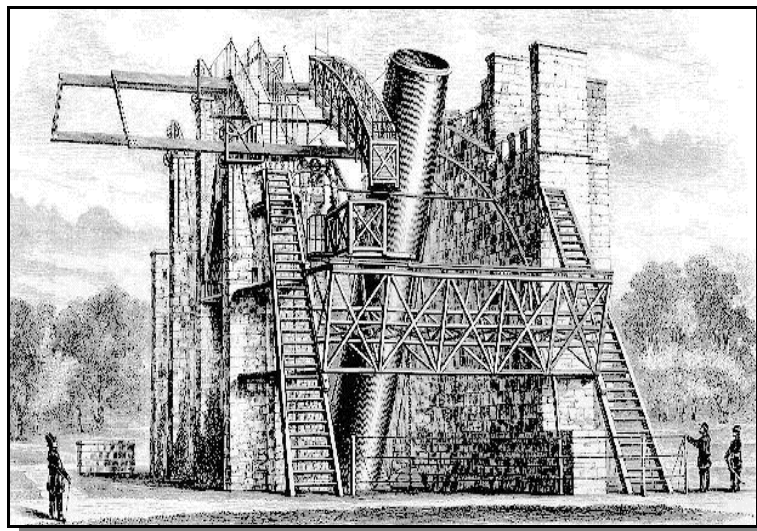
ply weren't very reflective, and they required a great deal of maintenance.

While some telescope makers worked on improving the reflector, refractors remained smaller but the quality of their images made them the choice for major observatories. In the late 1700's, a major improvement occurred as a result of John Dollond's development of an achromatic ("non-chromatic") lens system for refracting telescopes. Typically, two separate lenses are used for the objective, one of crown glass and the other of flint. Flint is softer, so it was generally the element that faced the inside of the

telescope. Chromatic aberration in refractors was now greatly diminished.

Charles Messier provides a good example of the situation at this time. During the period from 1765 to 1807, he used both refractors and reflectors. For awhile, his favorite was a 7½-inch Gregorian reflector with a focal length of 32-feet, giving a magnification of 104x. Because of the speculum metal mirror, however, this provided light gathering equivalent to only about a 3½-inch refractor. Messier later did adopt a 3½-inch achromatic refractor giving 120x. Though his records list many tele-

(See History on page 4)



The Rosse 72" Reflector

(**PARTY** from page 1)

around admiring the scope is often enough for the owner to invite you to look. Some times you will need to start the conversation. Here are a some questions to ask.

*Are you the owner of this telescope?

*What are you looking at this evening?

Based on where the scope is pointed you could ask,

*Are you looking at _____ ?

*Wow, what kind of telescope is this?

*Would it be ok if I had a look?

Some of the telescopes that you run across might be unattended. For most wanderers it is an open invitation. My own personal take on this situation is

that it is ok to look through it. First determine if it is capped up! Focus and re-center the object if you are familiar with it's controls. I would not point it somewhere else unless I had permission from it's owner.

Always thank the owner for letting you look. And try to keep your comments positive. A lot of times it ends up being a person just starting the hobby. They need your encouragement.

CURRENT CLACK

New Date Added

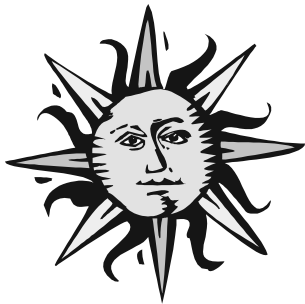
Please mark your calendars.

Kevin Bert will be looking for members with telescopes to entertain a large group of kids at Camp Matawa, Just north of Kewaskum on Saturday, October 9th at 8:00 p.m. Contact Kevin if you can help. 375-2239

Jeff Setzer will be looking for members with telescopes to help him at TJ Middle School in Port Washington. The primary date is set for October 27th at 8:00 p.m. with the back-up date the day before. Contact Jeff if you can help. 338- 8614.

Astronomy 101

By Kevin Bert



The October 101 topic will be "The Sun" by Kevin Bert. Solar activity is heading for a peak next year. See what this will mean to you. Learn how to safely view the sun and what things to look for.

The highlighted constellation will be Triangulum.

through a number of other scopes that were viewing Saturn and Jupiter late Saturday night. Most images were great. Jeff said, "Kevin, you have got to see this." Saturn looked really good when I initially stepped up to view it. It was a lot larger than most other scopes I thought that I would tweak the focus to see if it would sharpen up. " Oh yea, Oh yea, Oh my God!, HOLY BALLS !!" Definitely one of the best views I have ever seen. Razor sharp, and Hubble-like. The extra aperture allows you to magnify more and still retain good brightness. Rick uses an undersized diagonal that produces refractor like contrast in the image. He used Pegasus mirrors in that particular scope. Compared to a smaller refractor, it has better light collecting for most deep sky objects. It also breaks down into two manageable pieces. That's all for a lot less than the price of a large refractor. Rick has a great scope. Even though it is the smallest he makes, I predict will be one of his best selling when more people get to look through it.

From The Editor

By Kevin Bert

Greetings fellow star gazers. The lead article this month is a small one by me covering viewing etiquette for large star parties. It will give the person who has not been to one some idea of what to expect as you anxiously wait to view through other telescopes.

The second article will come in two parts and covers the history of the telescope.

Astrofest. was a hit again this year. Two clear nights made it an event to remember. My son, Dan and I met Jeff Setzer there late Friday evening. We camped next to Jeff's good friend Rick Sigmaster who makes the Starmaster telescopes. Rick had a 22" scope there for people to use along with a portable 10 and 11 inch Dobsonian..

The seeing conditions were pretty good most of the time and spectacular at others.

From my background as a tool and die maker the Astrophysics refractors are still a notch above other similar scopes in my book. Their large equatorial mount is simply amazing. Their optics are top notch too. Meade and other refractor optics are excellent too. They all come with a very big price tag.

I still feel that a good Newtonian is hard to beat. I again had this confirmed especially after looking through Rick's 10 inch f/6 scope. We had just finished looking



I would like to thank all of the members that attended the members night at my house. It turned out to be a clear and wonderful night.

1999 OFFICERS

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scopes, seldom is the aperture shown, only the focal length and magnification. Apparently, the interchangeable eyepiece was not common at this time. Surely, astronomers must have been aware of the connection between aperture and light-gathering. The fact that Messier seldom mentions aperture might be due to the fact that the technology wasn't able to produce consistently good large optics; therefore, aperture was of secondary importance. The size of Messier's telescopes should give some encouragement to those who set out to find all the Messier objects using modest instruments.

In 1789, William Herschel constructed a 48-inch reflector, and around 1840, the Earl of Rosse built his giant telescope with a 72-inch mirror. Despite these advances, major observatories before the 20th century still preferred refracting telescopes because of their image quality. Another major concern was that the configuration of the large reflectors and the manufacturing capability of that time created some unwieldy mechanical and observer-access problems.

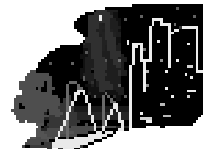
By the late 1800's, optical glass for large refractor

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Is published by the Northern Cross Science Foundation, Inc. A nonprofit organization based the state of southeastern Wisconsin and is a Member of the North-Central Region of the Astronomical League.



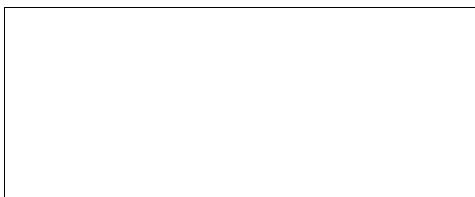
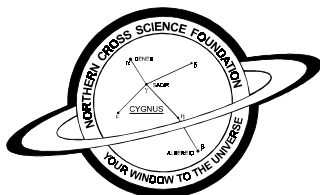
The NCSF supports the International Dark sky association.



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